

WHAT IS CLAIMED IS:

1 1. A method of manufacturing an ink jet printing module comprising:
2 contacting a first component of an ink jet printing module having a surface with a
3 thermoplastic bonding component; and
4 heating the surface to bond the surface to the thermoplastic bonding component.

1 2. The method of claim 1, further comprising applying pressure to the surface and the
2 thermoplastic bonding component.

1 3. The method of claim 2, wherein pressure is applied during heating.

1 4. The method of claim 1, wherein the surface and the thermoplastic bonding
2 component are substantially free of liquid adhesive.

1 5. The method of claim 1, further comprising contacting a second component of the
2 ink jet printing module having a surface with the thermoplastic bonding component; and
3 heating the surface to bond the surface to the thermoplastic bonding component.

1 6. The method of claim 1, wherein the first component of the ink jet printing module
2 is a piezoelectric element.

1 7. The method of claim 6, wherein the thermoplastic bonding component includes an
2 electrode pattern.

1 8. The method of claim 6, wherein the piezoelectric element is lead zirconium
2 titanate.

1 9. The method of claim 1, wherein the thermoplastic bonding component has a
2 thickness between 1 micron and 150 microns.

1 10. The method of claim 1, wherein the thermoplastic bonding component has a
2 thickness between 10 micron and 125 microns.

1 11. The method of claim 1, wherein the thermoplastic bonding component has a
2 thickness between 20 microns and 50 microns.

1 12. The method of claim 1, wherein the thermoplastic bonding component includes
2 an adhesive polyimide.

1 13. The method of claim 1, wherein the ink jet printing module includes an ink
2 channel, the piezoelectric element being positioned to subject ink within the channel to
3 jetting pressure, and electrical contacts arranged for activation of the piezoelectric element.

1 14. The method of claim 13, wherein the ink jet printing module includes a series of
2 channels.

1 15. The method of claim 13, wherein the thermoplastic bonding component is placed
2 over the ink channel and includes a filter.

1 16. The method of claim 15, wherein the filter includes a repeating pattern of units
2 having a plurality of openings.

1 17. The method of claim 16, wherein a land between the units is at least 50 microns.

1 18. The method of claim 1, wherein the module includes an orifice plate and the
2 method further comprises adhering a protector strip over the orifice plate.

1 19. The method of claim 18, wherein the orifice plate includes a thermoplastic
2 bonding material adjacent to the protector strip.

1 20. The method of claim 18, wherein the protector strip includes a thermoplastic
2 bonding material adjacent to the orifice strip.

1 21. A method of manufacturing an ink jet printing module comprising:
2 contacting a first component of an ink jet printing module having a surface with a

3 thermoplastic bonding component;
4 contacting a second component of the ink jet printing module having a surface with
5 the thermoplastic bonding component; and
6 heating the surface to bond the surfaces to the thermoplastic bonding component.

1 22. The method of claim 21, further comprising applying pressure to the surface and
2 the thermoplastic bonding component.

1 23. The method of claim 21, wherein pressure is applied during heating.

1 24. The method of claim 21, wherein the surface and the thermoplastic bonding
2 component are substantially free of liquid adhesive.

1 25. The method of claim 21, wherein the first component of the ink jet printing
2 module is a piezoelectric element.

1 26. The method of claim 21, wherein the ink jet printing module includes an ink
2 channel, the piezoelectric element being positioned to subject ink within the channel to
3 jetting pressure, and electrical contacts arranged for activation of the piezoelectric element.

1 27. The method of claim 26, wherein the thermoplastic bonding component is placed
2 over the ink channel and includes a filter including a repeating pattern of units having a
3 plurality of openings and a land between the units is at least 50 microns.

1 28. The method of claim 21, wherein the module includes an orifice plate and the
2 method further comprises adhering a protector strip over the orifice plate.

1 29. An ink jet printing module comprising a piezoelectric element having a surface,
2 and a thermoplastic bonding component heat-bonded to the surface.

1 30. The ink jet printing module of claim 29, wherein the thermoplastic bonding
2 component includes a first surface heat-bonded to the surface of the piezoelectric element
3 and a second surface heat-bonded to a surface of an ink jet printing module component.

1 31. The ink jet printing module of claim 29, wherein the thermoplastic bonding
2 component includes an electrode pattern.

1 32. The ink jet printing module of claim 29, wherein the piezoelectric element is lead
2 zirconium titanate.

1 33. The ink jet printing module of claim 29, wherein the thermoplastic bonding
2 component has a thickness between 1 micron and 150 microns.

1 34. The ink jet printing module of claim 29, wherein the thermoplastic bonding
2 component has a thickness between 10 micron and 125 microns.

1 35. The ink jet printing module of claim 29, wherein the thermoplastic bonding
2 component has a thickness between 20 microns and 50 microns.

1 36. The ink jet printing module of claim 29, wherein the thermoplastic bonding
2 component includes an adhesive polyimide.

1 37. The ink jet printing module of claim 29, further comprising an ink channel, the
2 piezoelectric element being positioned to subject ink within the channel to jetting pressure,
3 and electrical contacts arranged for activation of the piezoelectric element.

1 38. The ink jet printing module of claim 37, further comprising a series of channels.

1 39. The ink jet printing module of claim 38, wherein each of said channels is covered
2 by a single piezoelectric element.

1 40. The ink jet printing module of claim 37, wherein the thermoplastic bonding
2 component covers the ink channel and includes a filter.

1 41. The ink jet printing module of claim 40, wherein the filter including a repeating
2 pattern of units having a plurality of openings and a land between the units is at least 50
3 microns.

1 42. The ink jet printing module of claim 41, wherein the width is 300 to 495 microns.

1 43. The ink jet printing module of claim 29, further comprising an orifice plate and a
2 protector strip adhered to the orifice plate, wherein either the orifice plate or the protector
3 strip includes a thermoplastic bonding material.